

CMS/CDC Nursing Home COVID-19 Data Quality Assurance Process

Data quality checks are performed by the Centers for Disease Control (CDC) and the Centers for Medicare and Medicaid Services (CMS) to identify instances where facilities may have entered incorrect data, such as entering cumulative counts over time instead of new cases, and other data entry errors.

Summary of CDC Quality Check Criteria

Data quality checks are performed on the following resident and staff data fields:

- Residents Weekly Admissions COVID-19
- Residents Weekly Confirmed COVID-19
- Residents Weekly COVID-19 Deaths
- Residents Weekly All Deaths
- Staff Weekly Confirmed COVID-19
- Staff Weekly COVID-19 Deaths

Criteria	Description	Actions
Criteria I	If analysis of the pattern of data indicates that data was being entered in a cumulative fashion rather than in an incident fashion per the instructions.	The data in that column is set to 0 and the facility is flagged in the dataset. The entire column of data fields for the given facility is set to 0 if a data field appears to be entered cumulatively.
Criteria II	At the individual record level, daily data entries are reviewed to identify outlier values that may appear invalid. Outlier values are defined as values that exceed the percentile criteria cut point for each Resident Impact and Staff/Personnel Impact variable as depicted in the table below.	Values that exceed the percentile criteria are reassigned a 0 value on the specific date for which the data were entered (single data entry nullification) and the facility is flagged in the dataset.

Criteria II Cut Values:

Individual variable	Percentile criteria	Cut-point value
Resident pathway		
Residents Weekly Admissions COVID-19	value at 99.9th percentile	26
Residents Weekly Confirmed COVID-19	value at 99.9th percentile	55
Residents Weekly All Deaths	value at 99.9th percentile	36
Residents Weekly COVID-19 Deaths	value at 99.9th percentile	29
Staff pathway		
Staff Weekly Confirmed COVID-19	value at 99.9th percentile	37
Staff Weekly COVID-19 Deaths	value at 99.95th percentile	4

Data quality checks are performed on the following vaccination data fields:

- Percentage of Current Residents with No Medical Contraindications who Received a Completed or Partial COVID-19 Vaccination at Any Time
- Percentage of Current Healthcare Personnel with No Medical Contraindications who Received a Completed or Partial COVID-19 Vaccination at Any Time

If the value of these fields is less than or equal to 10% for reporting weeks March 1 – present, the facility is flagged in the dataset.

Summary of CMS Quality Check Criteria

Facilities are excluded when either Residents Total Confirmed COVID-19, Residents Total COVID-19 Deaths, Staff Total Confirmed COVID-19, or Staff Total COVID-19 Deaths appear implausible relevant to each other or the Number of All Beds. Four criteria based on data reported on residents to determine if a facility is excluded or included. Specifically, all facility's data for all weeks are excluded based on data reported on residents if:

- 1) The ratio of Residents Total Confirmed COVID-19 to Number of All Beds is greater than or equal to 1.75; that is, resident cases is at least 75% larger than total facility beds.
- 2) The ratio of Residents Total COVID-19 Deaths to Residents Total Confirmed COVID-19 and Residents Total Admissions COVID-19 is greater than or equal to 1.5; that is, resident deaths is at least 50% larger than resident cases and admissions combined.
- 3) The ratio of Residents Total COVID-19 Deaths to Number of All Beds is greater than or equal to 1.15; that is, resident deaths is at least 15% larger than total facility beds. A facility is also excluded if Residents Total COVID-19 Deaths was zeroed-out due to a quality check.

Exception: If any of these three conditions are met, a facility is still included if:

- 4) The facility reports fewer than 25 Residents Total COVID-19 Deaths or fewer than 25 Residents Total Confirmed COVID-19.

Three criteria based on data reported on staff also determine if a facility is excluded or included. Specifically, a facility is excluded based on data reported on staff if:

- 5) The Staff Total COVID-19 Deaths to Staff Total Confirmed COVID-19 is greater than or equal to 1.5; that is, staff deaths is at least 50% larger than staff cases. If there are fewer than 10 Staff Total COVID-19 Deaths, the facility is included.
- 6) The ratio of Staff Total COVID-19 Deaths to Number of All Beds is greater than or equal to 1.5; that is, staff deaths is at least 50% larger than total facility beds.
- 7) The ratio of Staff Total Confirmed COVID-19 to Number of All Beds (a) is greater than 2.0 if the Number of All Beds is 50 or fewer and (b) is greater than 1.25 if the Number of All Beds is greater than 50.

This procedure aims to reduce misrepresentation and inaccuracies in the public reporting of these data. Nursing homes that fall under these conditions will be flagged as "N" in the "Passed Quality Assurance Check" column and their data will not be included in the public dataset.